

## V.—On some new Genera of Raptores, with remarks on the old genera.

By B. H. HODGSON, Esq.

I have the honor to submit, herewith, some original and amended generic characters of new forms of *Raptores* which have been described particularly in various numbers of your Journal. Those who are best acquainted with the present state of classification in regard to the *Falconidæ* and *Strigidæ* will, I apprehend, be most ready to make allowance for any possible imperfections cleaving to these characters.

Family FALCONIDÆ. Sub-family AQUILINÆ. Genus *Nisaëtus*, nob.

Bill short\*, at base as high as broad, distinguished by compression without feebleness, strongly festooned. Nares large, vertical, elliptic, angulated, and wholly lateral in exposure. Wings short, firm; 5th quill longest. Tail long, firm, and square. Tarsi elevate, but not feeble, wholly feathered.

Digits elongated, nervous; the inner fore and the hind highly developed.

Acropodia reticulate with three or four scales next each talon. Talons immense, very unequal, strong and acute. Head usually crested.

Types, *N. Pulcher*, No. 680; *N. Nipalensis*, No. 9; *N. Pallidus* No. 8; *N. Grandis*, No. 7, nobis.

*Habits.* Preys on jungle fowl, partridges, hares: watches from a lofty perch, usually pouncing on its game when near it; sometimes pursues with energy on the wing; flight direct; does not seize on the wing. *Habitat*, saul forest, Taraï, and lesser hills. Not migratory; size rather large. Connects the most typical hawks with the most typical eagles. Digits and talons pre-eminently raptorial.

FALCONINÆ. Genus *Baza*, nob.

Bill as in *Ierax*, but somewhat longer and more compressed before the cere. Upper mandible with two long sharp teeth on either side, close to each other and to the hook, and directed forwards. Lower mandible with three or four smaller teeth correspondent to the above. Orbits and lores thickly and softly plumed. Nares transverse, rimi-form, with the cere behind them membranous and free. Legs and feet short and thick. Tarsi half plumed, coarsely reticulate, longer than any digit. Toes cleft and depressed: the laterals subequal; the inner longer than the outer; the hind large. Acropodia wholly

\* Short with reference to the *sub-family*: and so of all the generic terms subsequently employed; for instance, ears small and simple, in reference to scops, as a genus of the *sub-typical group* of *Strigidæ*.

scaled. Talons sub-equal, acute, wings long, broad-webbed, sub-equal to the tail; 3rd quill longest; notch of the inner web remoter than in *Falco* or in *Ierax*. Head crested.

Type, *Baza Syama*\*, nob. No. 657. *Habitat*, lower region of hills: size small; make robust: habits insectivorous.

Affinities various with *Cyminais*, *Harpagus*, *Ierax* and *Pernis*†. Not known to Indian falconers. Station in VIGOR'S arrangement, at the head of the *Falconinæ*, between *Harpagus* and *Ierax*.

STRIGIDÆ, Aberrant group. Sw.

Disc and conch evanescent: ears simple. Sub-family of the eagle owls, or *Aëtoglaucinae*, nob.

Egrets conspicuous: great size and strength. Sub-diurnal questing. A very strong elongated bill. Eminently raptorial feet, and ample gradated wings, equal or nearly so to the medial square tail.

Genus *Huhúa*, nob.

Bill equal to the head, basally straightened beyond the cere, suddenly hooked, very strong, festooned, with trenchant scarp to the tip.

Nares ovoid, transverse, partially exposed. Wings sub-equal to the tail: 4th and 5th quills sub-equal and longest. Tarsi short, immensely stout, thickly plumed. Toes very strong, hirsutely plumose, partially denuded and scaled; the exterior antagonising but *not* versatile. Talons immense, acute, very unequal; the inner fore conspicuously largest; and hind equal to the outer fore.

Type, *Huhúa Nipalensis*, nob. No. 54‡. *Habitat*, all three regions of the hills. Habits subdiurnal and mammalivorous.

Genus *Cultrunguis*, nob.

Bill equal to head, straightened as far as the cere, gradually curved beyond it, moderately compressed, strong. Nares elliptic, partially exposed. Wings unpectenated, equal to the tail; 4th quill longest. Tarsi sub-elevate, strong, compressed, partially or wholly nude, reticulate. Toes long, nervous, compressed, reticulate, with three or four scales next each talon; the anterior digits sub-equal; the hind large. Soles of the feet aculeated. Talons sub-equal, compressed, strong, cultrated below§.

\* *Syama*, in Sanskrit, means black-blue.

† I should rather say, affinities with *Harpagus* and *Ierax*. Analogies with *Cymindis* and *Pernis*. Our bird is, unquestionably, a Falconine type—which *Cymindis* and *Pernis* are *not*.

‡ N. B. The numbers refer to the series of specimens and drawings in London.

§ Unde nomen genericum: the strong and nearly equal talons are sloped from a round back or culmen to an inferior edge, which is as sharp as a knife, and

Types, *C. Flavipes* et *C. Nigripes*, nob. Nos. 55 and 56. *Habitat*, the lower region of the hills. Habits diurnal and piscivorous. Size large.

*Remarks.* In my judgment, *Huhúa* is the equivalent of *Aquila*, and *Cultrunguis* of *Pandion*, among the diurnal *Raptores*, which are, no doubt, represented by the nocturnal *Raptores* in nature, though not yet in our systems. Those systems wholly want a Strigine sub-family answering to the *Aquilinæ*.

The section, therefore, standing at the head of my two genera must be understood as resting on no better authority than my own. It is probable that the evanescent character of the disc and conch with the absence of the operculum, belong to the hawk and falcon owls as well as to eagle owls; and that the contradistinctive marks of the latter must be sought, in their great size, their prolonged but strong bill, their formidable legs, feet and talons, their ample gradated wings, and their medial and even tails. All these marks, not less than the former ones, characterise our *Huhúa* and *Cultrunguis*: whereas our *Ninox*, which is small, and has its bill, wings and tail formed on the Falconine model, is yet equally distinguished with *Huhúa* and *Cultrunguis*, by evanescent disc and conch, and perfectly simple small ears. Hence my impression of the very great prevalence of the latter characters, which seem to extend over *all* the aberrant sub-families of the *Strigidæ*, accompanied by egrets in the eagle owls, but *not* so in the hawk and falcon owls—witness *Noctua* and *Ninox*. The presence or absence of egrets cannot be taken as a *primary* mark of the aberrant group; for to it *Huhúa* and *Cultrunguis* unquestionably belong, and both these types are egretted. Whether the egrets even constitute a *secondary* or sub-family mark of this group, may be doubted: but, at present, this would seem to be the case, and in conformity with this notion I have inserted egrets as one of the sub-family marks. There is no uniting accuracy with precision in generic characters, so long as we want family and sub-family characters. How then to characterise our *Ninox*?—a falconine type in its own circle of the *Strigidæ*, and as expressly equivalent to the lesser insectivorous falcons, as *Cultrunguis* is to *Pandion*. When recently defining *Ninox* I begun with, ‘bill, disc, conch and feet, as in *Noctua*,’ considering that genus—which is so remarkable in the family for its firm plumage and short wings as well as for the absence of those pre-eminently Strigine is eminently calculated, with the aid of the spinous sole of the foot, to clutch the bodies of fish. No analogy can be more beautiful than that of *Cultrunguis* to *Pandion*.

characters, the great disc and operculated ears—as a conspicuous type. Yet hardly three months elapsed when I received from England a systematic work from which *Noctua* is wholly expunged! *Noctua*, however, will, I think, retain its place, characterised in the aberrant group of the owls by short wings and firm plumage, and leading through *Surnia* to our *Ninox*, which I believe to be the least Strigine bird on record. Let us now attempt to define it, as a genus belonging to the aberrant group of the *Strigida*, characterised as before.

Genus *Ninox*, nob.

Bill short, arched from the base. Nares round, anteal, apert, tumid. General contour with the character of the plumage, extremely Falconine. Wings long, firm, unpectenated, sub-equal to the tail; 3rd quill longest; 1st and 2nd very moderately gradated. Tail long, firm, even. Tarsi plumose, rather short. Toes medial, depressed, bordered, rigidly hirsute; laterals equal, hind compressed. Head smooth, small, and only Strigine in the size and position of the eye.

Type, *Ninox Nipalensis*, nob. No. 657

*Habitat*, central and lower hills. Habits, subdiurnal and insectivorous.

Mr. SWAINSON appears to have laid undue stress on the egrets of the owls, which seem to me but little more influential than the analogous crests of the *Falconida*, and more especially of the *Aquilina*. Disc and conch evanescent, and ears simple, are the marks of the aberrant group, taken as a *whole*. Egrets, added to great size, ample gradated wings, and a medial even tail, with powerful legs and feet and talons, seem to me the subordinate signs of the *Aëtoglaucina* or *aquiline sub-family* of that group. Of the *Falcoglaucina* or sub-family typifying the *Falconina*, the first glimpse appears to be afforded by our *Ninox*, which has quite the proportions and aspect of many of the lesser insectivorous Falcons. Long and *firm* wings and *tail*—the latter even; and the former but slightly gradated; and both, in a word, adapted for strong flight—would seem to be *necessary* characters of this sub-family, and they are, at all events, characters eminently conspicuous in our *Ninox*. Between the wings of *Ninox* and those of *Strix* or *Otus* there is just the same sort of difference as exists between the wings of *Falco* and those of *Buteo*, or of *Milvus*—I mean as to suitability for vigorous flight, and expressly without special reference to the technical form of the wing.

The following comparative measurements of *Baza*, a small insectivorous Falcon, and of *Ninox*, a small insectivorous Falconine owl, can scarcely fail to excite interest. The measures are given in English feet and inches.

	<i>Baza.</i>	<i>Ninox.</i>
Total length, ... ..	1 0 $\frac{1}{2}$	1 0 $\frac{1}{4}$
Length of bill, straight, to gape, ... ..	0 0 $\frac{7}{8}$	0 0 $\frac{7}{8}$
Basal height of bill, extreme, ... ..	0 0 $\frac{3}{4}$	0 0 $\frac{7}{8}$
Basal width of bill, extreme, ... ..	0 0 $\frac{1}{16}$ $\frac{3}{8}$	0 0 $\frac{7}{8}$
Head straight, from gape to occiput, ... ..	0 1 $\frac{1}{4}$	0 1 $\frac{1}{4}$
Length of tail, ... ..	0 6	0 6
Tarsus, from inner salient angle above, to the sole, ... ..	0 1 $\frac{1}{4}$	0 1 $\frac{1}{4}$
Length of central digit, from extreme base to superior insertion of the talon, ... ..	0 1 $\frac{1}{8}$	0 1 $\frac{3}{8}$
Length of exterior digit, ... ..	0 0 $\frac{13}{16}$	0 0 $\frac{1}{16}$ $\frac{5}{8}$
Length of interior digit, ... ..	less $\frac{1}{16}$ $\frac{4}{8}$	0 0 $\frac{1}{16}$ $\frac{5}{8}$
Length of hind digit, ... ..	0 0 $\frac{9}{16}$	0 0 $\frac{1}{2}$
Straight length of central talon, ... ..	0 0 $\frac{9}{16}$	0 0 $\frac{1}{16}$ $\frac{9}{8}$
Ditto ditto exterior ditto, ... ..	0 0 $\frac{9}{16}$	0 0 $\frac{9}{16}$
Ditto ditto interior ditto, ... ..	0 0 $\frac{9}{16}$	0 0 $\frac{1}{16}$ $\frac{9}{8}$
Ditto ditto hind ditto, ... ..	0 0 $\frac{9}{16}$	0 0 $\frac{7}{8}$
Expanse of wings, ... ..	2 5 $\frac{1}{2}$	2 4 $\frac{1}{2}$
Length of a closed wing, ... ..	0 9 $\frac{1}{2}$	0 9 $\frac{1}{8}$
Longer diameter of opening of ear, ... ..	0 0 $\frac{3}{16}$	0 0 $\frac{3}{16}$
Diameter of the eye, ... ..	0 0 $\frac{6}{16}$	0 0 $\frac{8}{16}$
Weight of the birds, ... ..	7 $\frac{1}{2}$ oz.	7 $\frac{1}{2}$ oz.

To render this singular parallelism complete, I may add, that both birds are mature males of their respective species; that the females are scarcely larger and not at all different in aspect; that both are eminently conspicuous for the *insessorial* character of their feet, the digits of which are cleft to their origins, the soles quite flat and somewhat bordered; the anterior laterals of equal *strength* and *size*, and the central of the same thickness, and of very moderate excess of length. Wings and tail could not, in a Strigine bird, be more Falconine than those of *Ninox*; and hence these organs are almost precisely similar, both in form and proportion, to the same organs in *Baza*, which, though a Falconine bird, deviates widely from the restricted or *generic* type\*. Upon the whole, the only material differences of these birds are the inferior strength of the thumb with its talon, and the superior size of the eye, in *Ninox*—both differences eminently interesting, in as much as none are more universally and distinctly referable to the respective habits and exigencies of the two families of the nocturnal and diurnal *Raptores*.

\* *Peregrinus*, *Icelandicus*, &c. I exclude *Tinnunculus*, &c., under the separate sub-generic title of *Falcula*.

Mr. SWAINSON, in treating of the *Falconidæ* and *Strigidæ*, has seen perpetual reason to deplore the errors of systematic works.

In truth, it is hardly too much to say that the majority of recorded species are no species at all; and the majority of recorded genera insufficient or inaccurate.

The old species, described by color only, and when classification was in its infancy, cannot now be really appreciated except by personal examination. Nor can any words of condemnation be too strong for the modern practice of inserting these species, without such examination, under the strict subdivisions elaborated by recent science.

Such insertion must be made haphazard, and nothing is more common than to find one species registered in half a dozen genera, none of which suit it, or, if so, only by accident! For systematic writers now to rely on dried skins, is sufficiently objectionable: but their reliance on the old book descriptions is perfectly monstrous.

Mr. SWAINSON—*clarum et venerabile nomen*—has acknowledged with unusual explicitness that the examination of *fresh* subjects is, very generally, an indispensable condition of accuracy, and that, for all the higher purposes of science, an acquaintance with *habits*, as well as with structure, is required. Will it, then, be credited that, with almost all our recorded species calling for revision, and with our classification labouring, in vain, to advance per rudem indigestamque molem specierum, there is no sense on the part of Zoological associations at home of the necessity of any thing more than the collection of dried skins?

Such, however, is the fact; upon which I forbear, at present, from any comments, returning gladly to Mr. SWAINSON—whom any one would be proud to assist, if able; and, as I have some little practical experience of raptorial birds, and of the value of the generic characters assigned to them in books, I shall indicate what I conceive to be the diagnostics of some received genera.

#### AQUILINÆ. Genus *Pandion*.

Bill and head compressed. Gape narrow. Bill moderate, extremely rounded on the ridge, highly festooned; tomixæ scarpt and very trenchant. Brow not salient. Loes and cere almost nude. Nares rimiform, subtransverse, with the cere behind them membranous and free. Legs and feet spiculated, strong, compressed, nude, and reticulate. Toes nervous, cleft; the outer versatile with oblique grasp; the hind, very mobile. Talons highly falcated, nearly equal, compressed, rounded below. Wings exceedingly long, surpassing the tail; 3rd quill longest. Instances, *P. Vulgaris*, *P. Indicus*, nob. No. 715.

HALIAETUS. Sub-genus of *Pandion*?

Contradistinguished by a long bill, much more compressed on the ridge; by shorter, rounder wings, never surpassing and seldom equaling the tail, and which have the 4th and 5th quills sub-equal and longest; by wide, transverse nares of irregular form; by scaled tarsi and toes, in which moreover the spinous aculeation of *Pandion* is less developed, and the exterior and hind toes are less mobile; and, lastly, by talons less compressed and less rounded below—sometimes squared.

Types. *Haliaetus Ichthyætus Horsfieldii*, *Plumbeus et Albipes*, nob. Nos. 10 and 3.

The bill of *Haliaetus* is always longer and sharper on the culmen than in *Pandion*; but in some species, its cutting edge is as highly festooned as in *Pandion*; in others, it is as level as in *Aquila*: in some again the wings are considerably shorter than the tail; in others, equal to it.

Instances of the former peculiarities, *Ichthyætus et Plumbeus*; of the latter, *Albipes*. *Haliaetus* is further distinguished from *Pandion* by a nude salient brow: but both genera are alike remarkable for the compression of the bill and head, as compared with *Aquila*, and also for the smallness of the gape.

The very long unfestooned bill of *Albipes* is accompanied by a wider gape, by wings equal to the tail, by great size, and by talons perfectly squared below.

If *Ichthyætus*, then, be the type of *Haliaetus*—and no doubt it is—then *Albipes* is a separate type bearing the same relation to *Aquila*, as *Ichthyætus* to *Pandion*, and connecting *Aquila*, through *Haliaetus*, with *Pandion*. This type I have provisionally named *Cuncuma*, from its native name. It is a fisher, but not exclusively so; and is remarkable, like the bird of *Washington*, for its theftuous propensities\*.

*Pandion* is the king of fishers, and a more beautiful instance of the adaptation of structure to habits than this genus exhibits, is not to be found in the whole circle of ornithology. The rimiform nares may be

\* I make no allusion to birds which I am not personally familiar with; but I suspect that the American bird adverted to has a very strict resemblance to our *Albipes*, a resemblance including habits, size, and structure. If this be the case, it may be ranged by the side of *Albipes* under the sub-genus *Cuncuma*, of which the following are the characters. Bill long and void of festoon. Wings equal to the tail. Talons squared below. Size very great. There is a beautiful gradation of characters in these sub-genera, and a correspondent *modification of manners*, by means of which the type of the fishing eagles is linked with the type of the mammalivorous eagles.

closed by the lax membrane behind them so as to exclude the water : the compressed, spiculated, free toes, of which the outer fore may be turned quite back, and the hind almost forward, aided by the compressed cylindric and highly curved talons, are the very weapons to take fish with ; whilst the immense wings enable the bird to quit his own element with impunity, and to bear off, from the bosom of the waters, fish of far greater weight than himself. Falcons trained to duck-hunting dare not suffer the water to touch their plumage, always quitting their grasp if the quarry can near it in the struggle. But *Pandion* will plunge dauntlessly into the deep, and will strike fish so large that they sometimes carry him under and destroy him, though he has nothing to forbear from a fish twice his own weight. In India the birds of this genus are not migratory : they breed in lofty trees overhanging large lakes, laying their eggs in April, May ; and rearing two young, which usually quit the nest in June, July. The white-footed *Cuncum* (*Haliætus Albipes*) (which is a vastly larger bird) frequently robs the Indian *Pandion* of his spoil, just as the white-headed species of the West does the *Pandion* of that region. Those who have classed the *Brahmaní Cheel* of India (*Haliætus Pandicerianus*) with the fishing eagles, may be safely said to know as little of the structure, as of the habits of that pakry Milvine bird ; or else of the group with which they have associated it. True, *Pandicerianus* has a festooned bill\* : but its feet are those of *Buteo* or of *Milvus*, without a trace of the peculiar structure of those organs in the piscatory eagles. Its chief food is insects, and its manner of questing similar to that of *Circus*. It feeds freely on dead fish and on other carrion in winter.

#### STRIGIDÆ.

*Typical group.* Disc and conch immense. Ears large and operculated.

Sub-genus *Strix*.

Bill longer than the head, straightened, shallow, feeble, with the

\* The armed bill, however, insisted on as a pre-eminent mark of the *Raptores*, has as much reference to *insectivorous* habits as to more noble ones. And whenever the tooth or festoon of the bill is, however highly developed, rather sharp than strong, insectivorous habits may be safely inferred. These sharp processes of the bill remind one of the peculiar character of the teeth in the lesser insectivorous carnivora, such as *Herpestes*. Here also there is high development *without* concomitant strength : and if we look through the typical sub-family of the diurnal *Raptores*, we shall find the dentation of the bill most developed, in *one* sense, among the lesser insectivorous genera, such as our *Baza Elanas*, as well as the *Brahmaní Cheel*, may be cited to prove that a *festooned* bill does not, per se, imply noble habits.



maxilla cut out by large nasal fossæ. Nares longitudinal and lunated. Valve of the ear definite, tetragonal. Wings long, feeble, exceeding the short and feeble tail: 2nd quill longest. Tarsi long, slender, partially implumose. External toe basally connected as in Falco. Central talon pectinated.

Type, *S. Flammea*.

#### OTUS.

Head more or less egretted. Bill short, wholly arched on the culmen, high and deep at the base. Valve of the ear indefinite, confluent with the immense valvular disc, the opposite sides of which are connected over the ear passage by a membranous ligament. Wings long, feeble, scarcely or not at all exceeding the tail; 2nd quill longest; 1st strongly notched near the tip. Tarsi and toes short and plumose.

Types, *Otus Vulgaris et Brachyotus*.

Sub-typical group.

Disc and conch medial, perfect. Ears smaller, operculated.

#### Genus SCOPS.

Bill short, arched from the base, nostrils round, tumid. Head egretted. Ears simple, small\*. Wings medial, sub-equal to the tail: 3rd and 4th quills sub-equal and longest. Toes feeble, nude, sub-depressed. Plumage soft and vermiculated. Size small. Habits insectivorous and nocturnal.

Instances. *Scops Sunia*, *Scops Lettia*†, *Scops Pennata*, nob. Nos. 64, 66, 721, respectively.

Aberrant group.

Disc and conch evanescent. Ears small and simple.

#### NOCTUA.

Bill short, arched from the base. Nostrils round, very tumid, sometimes tubular. Head smooth. Toes hairy, feeble, and sub-depressed. Wings short, scarcely exceeding the base of the tail; 4th quill longest. Tail slightly elongated, rounded. Plumage firm and lineated. Size small. Insectivorous and nocturnal.

Instances. *N. Cuculoides*, GOULD; *N. Auribarbis*; *N. Tarayensis*; *N. Perlineata*; *N. Tubiger*, nob. Nos. 67, 63. 707, 486, respectively.

\* Small and simple with reference to the group. The ears are, in fact, nearly twice as large as in the proximate genus *Noctua*, which I have ranged in the aberrant group.

† *Scops Lettia* is possibly the *Asio auctororum*: but there is no safe quoting of species from books. *Asio* has been made a *Scops*, an *Otus*, or any thing else, at the discretion of the discreet!

*Scops* seems to me to stand on the confines of the sub-typical group, leading to *Noctua* as among the first of the aberrant group. One is egretted, the other not; one has the plumage characteristically soft and lax, the other has the plumage, including the alar and caudal feathers, a good deal firmer. The wings of one scarcely surpass the base of the tail, those of the other reach nearly to its tip.

The disc of the one is nearly perfect, and the ears comparatively large, though simple. The disc of the other is very imperfect, and the ears much smaller. So also the eye and head\*. The one has nude toes, and the other hirsute one. Lastly, a very maculate vest seems as common with *Scops*, as a lineated garb with *Noctua*. The size of both is small; both have an Otine bill with feeble feet; and both are nocturnal and insectivorous.

The above characters of known genera are, of course, mere suggestions, as emanating from one who has neither museum nor library at command. But, if practical experience be of any worth, they are suggestions which the skilful may take much advantage of, I suspect that plumage *very* soft, *moderately* soft, and more or less *hardened* or *firm*, might be ascribed, respectively, to the typical, sub-typical, and aberrant groups of the *Strigidæ* with safety and advantage.

I have great doubts as to the position of our *Urrua* and *Bulaca*. By the elongation and strength of the bill they are affined to the eagle owls; but the high development of the disc and conch, though far short of *Otus*, yet seems to indicate the position of these birds to be the sub-typical group. Though very similar in structure and size, one has the egrets, as well as subdiurnal habits and pale iris of *Otus*; but in this (*Urrua*) the valve of the ear is evanescent: whilst the other (*Bulaca*) with the smooth head and valved ear, has also the nocturnal habits and dark iris of *Strix*. The size of both is greater than that of either of these genera. In *Scops* the size and character of the disc and conch are very similar to those of *Urrua*: but the former is a small nocturnal and insectivorous bird; the latter, a large, semi-diurnal and mammalivorous one. *Bulaca* again, with something of the aspect, and with entirely the manners, of *Strix*, is sundered from *Strix*, toto cælo, by the strength of its bill, the high gradation of its wings,

\* The relative volume of the head amongst Strigine birds is more apparent than real. It is caused by the immense quantity of plumes protecting the conch when the ear has much of the peculiar family structure; and consequently this feature is quite as noticeable in *Otus* as in *Strix*; because in the former genus the ear is even *more signally* Strigine than in the latter.

and the superior length and firmness of its tail, as well as by its short and strong legs. In the last respect there is a close resemblance on the part of *Bulaca* to *Otus*; but the conch and disc are not half the size that they are in *Otus*; the conch is oval, and the definite form of the ear-valve is quite opposed to the character of this organ in *Otus*, agreeing more closely with *Strix*. The long and feeble wings and short and feeble tails of *Strix* and of *Otus*, are characters peculiarly their own: and they are united with, in the former, a bill so long and feeble, and, in the other, a bill so short and arched, that there is no mistaking the combination of these attributes in either genus. I know no Strigine type at all agreeing with *Strix* in the character of the bill, taking its feebleness and length together. But, it is a grievous mistake to suppose, with CUVIER, that *Strix* alone exhibits either elongation or straightness in this member: for, not only our *Huhúa* and *Cultrunguis* have a long and straightened bill; but these characters are distinctly, though less, developed in *Urrua* and in *Bulaca*.

The otine form of the rostrum (short, thick, and wholly curved) no doubt is very prevalent among the *Strigidæ*; since it is possessed in common by *Otus*, *Bubo*, *Scops*, *Noctua*, and *Ninox*. But the tumidity of the nares in the three last is not found in the first: and *Ninox* (not to mention its smooth head, divested of all Strigine characteristics save the size of the eye) is sundered wholly from *Otus* by its firm plumage, and by the length and strength of both wings and tail. In *Otus* the tail, though longer, is as feeble as in *Strix*; and in both these genera the wings, though long, have all the flimsiness proper to the family.

*Noctua*, by its firm plumage (including wings and tail) as well as by its depressed perching hairy feet, its evanescent disc, simple small ears, smooth head, and short arched bill with tumid round nares, makes the nearest approach to our *Ninox*. But shortness in the wing is the pre-eminent attribute of *Noctua*, whilst the very opposite is that of *Ninox*. In *Surniæ* the wings appear to be rather short, and the tail, though long, is extremely wedged. In *Ninox* alone have we wings and tail formed upon the Falconine model. And these peculiarities, taken in connexion with feet in which the insectorial character prevails almost over the Raptorial—just as it does in many of the little insectivorous Falcons—constitute our *Ninox* a signal type. Our *Cultrunguis* is equally conspicuous by its Pandionic feet and habits; and our *Huhúa* by its combination of aquiline attributes—the chief of which are pre-eminent size and strength, and a bill uniting length and straightness with enormous power. I am quite certain that both these birds

represent the sub-family of the eagles, in the aberrant group of the *Strigidae*; and not merely so, but precisely, *Aquila* and *Pandion*. But as to the situation of *Urrua* and *Bulaca*, or as to their analogies, I am quite at a loss. Taking, however, as my guide the *medial size of the disc and conch*, I shall class them, for the present, in the sub-typical group, characterised as before; and the following generic characters may, I hope, serve to make them understood, in themselves and in their relations.

## STRIGIDÆ.

## Sub-typical group.

## Genus URRUA, nob.

Bill sub-equal to the head, somewhat elongated, scarcely arched from the base, compressed, strong. Nares ovoid, transverse. Wings and tail somewhat elongated: wings moderately gradated, 3rd and 4th quills sub-equal and longest. Tail not bowed, even. Tarsi and toes plumose. Tarsi elevate, not feeble. Head egretted. Ears scarcely valved, oval, traversed by a membranous thong. Size considerable. Habits sub-diurnal. Dwells frequently in holes on steep bank-sides.

Type, *Urrua Cavearea*, nob. No. 57.

## Genus BULACA, nob.

Bill sub-equal to the head, somewhat elongated, scarcely arched from the base, compressed, strong. Nares elliptic, transverse, tumid. Wings conspicuously gradated; considerably shorter than the tail; 5th and 6th quills longest and sub-equal. Tail sufficiently elongated, bowed. Conch ovoid. Legs and feet, short, strong, plumose. Head smooth. Habits nocturnal. Size considerable.

Type, *Bulaca Newarensis*, nob. No. 59.

It is quite out of the question to range *Urrua* with *Otus*, because of the greatly inferior size of the disc and conch; or with *Bubo*, because of the length of the legs; or with either, because the bill is decidedly, though not conspicuously, elongated and straightened. Equally impossible is it to range *Bulaca* with *Strix* or with *Otus*; because its disc, though perfect, is not larger than in *Urrua*; because its bill is (like that of *Urrua*) stronger and shorter than that of *Strix*, longer and less arched than that of *Otus*; and because its wings have characters quite opposite to those of either genus.

*Urrua* has the sub-diurnal habits, the pale iris and the egrets of *Otus*; *Bulaca*, the nocturnal habits, the dark iris, and the smooth head of *Strix*. In both the orifice of the ear is oval, but large ( $1\frac{2}{8}$  inch long). In *Bulaca* it has a large distinct valve: in *Urrua*, scarcely any. In neither is there any appearance of the long circular denuded line

defining the course of the disc in *Strix* and *Otus*, and seeming, as it were, to lay bare the whole head.

This organ, both in size and character, is *essentially* mediate in these birds, between the typical structure as seen in *Strix* and *Otus*; and the aberrant structure, as exhibited in *Noctua*, *Ninox*, *Huhúa*, and *Cultrunguis*.

The following comparative measurements, in English inches, may help the curious to appreciate the value of those perplexing but necessary terms, *long* and *short*, as applied to bills, tails, and legs.

	Length of the bird.	of the tail.	of the tarsus.	of the bill.
<i>Strix</i> , .....	$14\frac{1}{2}$	$5\frac{1}{4}$	$3\frac{1}{4}$	$1\frac{3}{4}$
<i>Otus</i> , .....	$14\frac{1}{2}$	6	2	$1\frac{1}{4}$
<i>Urrua</i> ,.....	22	$9\frac{3}{4}$	$3\frac{1}{2}$	$1\frac{7}{8}$
<i>Bulaca</i> , .....	22	$9\frac{3}{4}$	$2\frac{3}{4}$	$1\frac{7}{8}$
<i>Scops</i> , .....	$9\frac{1}{2}$	$3\frac{3}{4}$	$1\frac{1}{4}$	$\frac{7}{8}$
<i>Noctua</i> , .....	$9\frac{1}{2}$	4	$1\frac{1}{4}$	$\frac{7}{8}$
<i>Ninox</i> ,.....	12	6	$1\frac{3}{8}$	$\frac{7}{8}$
<i>Huhúa</i> , .....	30	12	$3\frac{1}{8}$	$2\frac{3}{8}$
<i>Cultrunguis</i> , .....	24	$9\frac{3}{4}$	$3\frac{7}{8}$	$2\frac{1}{8}$

P. S. Since the above paper was composed, I have received, from the lower hills, a fine specimen of the *Strix Coromandra* of LATHAM. With the size it has all the characters too, of our *Urrua*, except in the legs, the tarsi being lower, and the toes scopine but stronger. The opening of the ear is about one inch, long, ovoid, and not valvular, though the membranous edge be more or less free all round it. I know nothing yet of the *habits* of this bird. If they agree with those of *Urrua*, it may form a species of this genus or sub-genus; and its toes are not absolutely nude, though nearly so. But it seems to be an osculant species leading to *Scops*. The wings and tail are both somewhat elongated, and sufficiently firm, though the general plumage be remarkably soft. The wings are not much short of the tail, and they have the 3rd quill longest, the 4th nearly as long; the first and second, moderately gradated. The toes, which are longish and not feeble, are remarkable for a softly papillose and flattish sole. To the external one there is a vague basal membrane; and the hind is stronger than usual. The talons are sufficiently elongated and acute; the inner and central, the outer and hind, being respectively equal.

The nostrils are nearly round and somewhat tumid: the bill, like that of *Urrua* and *Bulaca*, combines strength with a tendency to elongation and straightness, not noticeable in *Otus*. My bird is a mature female, 21 inches long, of which the bill is  $1\frac{3}{4}$ , and the tail  $9\frac{1}{8}$ , the tarsus is  $2\frac{3}{4}$ , and the central toe  $1\frac{7}{8}$ .